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of treatment which characterized the former has been continued. A slight change in the title, the former having been "A Text-book for Secondary Schools, Normal Schools and Colleges," may possibly reflect somewhat of the well-meant criticism of the reviewer, possibly some slight change of attitude on the part of the author, touching the attempt to comprise so large a scope of utility for a single book. The principal feature of the new edition calling for mention is that comprising the added chapters already referred to. These the author designates a "third part, a group of synthetic chapters (XXVI.-XXIX.) to induce the student to gather up the details of his course by a new reorganization of the materials." The captions of the chapters will indicate their scope. Chapter XXVI., "The Doctrines of Evolution and Related Ideas," among which are heredity and Mendelism. Chapter XXVII., a very interesting one, is devoted to "Economic Zoology," including such features as "Animals as a Food Supply, Animals as a Source of Clothing for Man, Animals in Science and Medicine," etc. Chapter XXVIII., "Development of Zoology," is a brief summary of the history of zoology, including the "Greek and Roman Periods, the Middle Ages, Modern Period and Its Specializations," and ending with sections of the "Philosophy of Biology, and Applications of Biology."

It is a matter of regret that some of the errors pointed out in the previous edition have been allowed to go uncorrected. For example, the obvious error in the description of expanded and contracted conditions of *Vorticella* in Fig. 70 (68 of the first edition). Perhaps the error was so obvious as to be regarded beyond the necessity of correction, assuming that every one concerned would make it for himself! Again, the pleasing bit of biological fiction involved in the symbiotic relations of certain hydroids and the hermit crab, that "the polyps cover up the shell occupied by the crab, thus concealing it from its enemies and its prey," the unwarranted assumption of which was shown in the former review, remains in spite of reviewer, or well-known facts to the contrary. In this connection may also be pointed

out that the illustrations of hydroid ontogeny shown in Fig. 84 are likewise of extremely doubtful validity, as are also other features in connection with the treatment of the coelenterates.

In conclusion the reviewer would incline to question the assumption of the author (Preface, p. v) "that the right text-book of zoology, as of every other subject, is primarily a matter of psychology." It would be futile to discuss this proposition in this connection, but it seems fairly evident that there may be intrinsic and inherent principles which determine, quite as much as any psychological quirks, the method and content of a zoological text-book.

C. W. H.

#### PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES

THE tenth number of Volume 1 of the *Proceedings of the National Academy of Sciences* contains the following articles:

1. *The Octopus Motive in Ancient Chiriquian Art*: GEORGE GRANT MACCURDY, Peabody Museum, Yale University.

After discussing general features of animal motives in Chiriquian art, the octopus motive, which appears hitherto not to have been identified, is traced through a number of varying forms in vases, of which six are figured in cuts.

2. *The Life Cycle of Trypanosoma brucei in the Rat and in Rat Plasma*: RH. ERDMANN, Osborn Zoological Laboratory, Yale University.

The method employed affords the means of following, outside the body of the host, the sequence of changes in the life of trypanosomes, and its use has shown dimorphic forms, latent or round, and crithidia-like forms in *Trypanosoma brucei* outside of the host.

3. *The Effect of Pressure on Polymorphic Transitions*: P. W. BRIDGMAN, Jefferson Physical Laboratory, Harvard University.

This note presents, in a compact form by means of diagrams, many of the essential facts concerning the effect of high hydrostatic pres-

sure on the polymorphic transitions of 30 substances.

4. *On Isothermally Conjugate Nets of Space Curves*: GABRIEL M. GREEN, Department of Mathematics, Harvard University.

A necessary and sufficient condition that a conjugate net of curves on a surface be isothermally conjugate is that at each point of the surface the pair of axis tangents, the pair of associate conjugate tangents, and the pair of anti-ray tangents be pairs of the same involution.

5. *The Rôle of the Liver in Acute Polycythaemia: The Mechanism Controlling the Red Corpuscle Content of the Blood*: PAUL D. LAMSON, Pharmacological Laboratory, Johns Hopkins University.

There is in the body a mechanism for regulating the red corpuscle content of the blood; this mechanism is under nervous control, responding to nervous, chemical and emotional stimuli; the adrenal glands play a part in this mechanism, and the liver is the seat of the changes which increase the number of red cells, partly by a reduction in plasma volume, and partly by bringing cells into the circulation which are not normally present.

6. *The Potentials at the Junctions of Salt Solutions*: DUNCAN A. MACINNES, Laboratory of Physical Chemistry, University of Illinois.

The author calls attention to the fact that the liquid junction potential  $E_L$  of a concentration-cell of the type  $\text{Ag} + \text{AgCl}, \text{KCl}(C_1), \text{KCl}(C_2), \text{AgCl} + \text{Ag}$  can be derived from measurements of its electromotive force  $E$  and of the cation-transference number  $n_c$  with the aid of the equation  $E_L/E = (2n_c - 1)/2n_c$ . This equation involves only the assumption that the work attending the transfer from one concentration to the other of one equivalent of ion is the same for the cation as for the anion. The author substantiates this assumption by showing that this equation, when applied to the electromotive force data of Jahn, leads to nearly the same values of  $E - E_L$  (which should equal the difference in the two electrode-potentials) whether the electrolyte be  $\text{KCl}$ ,  $\text{NaCl}$  or  $\text{HCl}$ .

7. *A Statistical Study of the Visual Double Stars in the Northern Sky*: ROBERT G. AITKEN, Lick Observatory, University of California.

At least one in every 18, on the average, of the stars as bright as 9.0 magnitude in the northern half of the sky is a double star visible with the 36-inch telescope. Close visual double stars are relatively more numerous in the Milky Way than elsewhere in the sky, and visual double stars as a rule revolve in relatively small orbits. Close visual double stars are rare among stars of either very early or very late spectral class.

8. *Walnut Mutant Investigations*: ERNEST B. BABCOCK, Division of Genetics, Department of Agriculture, University of California.

The mutation takes place in female flowers only and appears in the first generation after the mutation occurs but on crossing with the species type it is completely recessive in the  $F_1$  generation and the nature of the mutation is such that only certain genetic factors are affected without having the chromosome number disturbed.

9. *Hereditary Fragility of Bone*: C. B. DAVENPORT AND H. S. CONARD, Carnegie Institution of Washington and Grinnell College, Iowa.

Of a parent who early in life was affected with brittle bones at least half the children will be similarly affected, but if neither parent, though of affected stock, has shown the tendency, then expectation is that none of the children will have brittle bones.

E. B. WILSON

#### SPECIAL ARTICLES

ON THE OCCURRENCE IN THE SOUTHERN HEMISPHERE OF THE BASKING OR BONE SHARK, *CETORHINUS MAXIMUS*

SINCE it does not seem generally to be known that this giant elasmobranch is found in southern waters, it may be of interest briefly to give the following data which have been noted from time to time in the course of other ichthyological studies.

The old writers thought that this great beast was confined to the far north Atlantic and to the Arctic Ocean. Of these, Friedrich Faber